

PHYSICS AND PHYSICISTS IN THE SHEVCHENKO SCIENTIFIC SOCIETY

**Yurij HOLOVATCH^{1,2,3}, Yulian HONCHAR^{1,2,3,4},
Mariana KRASNYTSKA^{1,2}**

¹ Institute for Condensed Matter Physics, National Academy of Sciences of Ukraine
1 Svientsitskoho Street, Lviv, 79011

² L⁴ Collaboration and International Doctoral College for the Statistical
Physics of Complex Systems, Leipzig-Lorraine-Lviv-Coventry, Europe

³ Coventry University

Coventry CV1 5FB, United Kingdom

⁴ National University of Kyiv-Mohyla Academy

2 Skovorody Street, Kyiv, 04655

The physicists who were full members of the Shevchenko Scientific Society in Lviv are in a focus of attention. 21 physicists became the full members of the Society in the period from 1899 to 1940. Publications in the field of physics regularly appeared in "Proceedings of the Mathematical-Natural Sciences-Medical Section of the Shevchenko Scientific Society", with a total number of 74. Physicists were active in the clandestine Ukrainian University in Lviv. The research papers of the Society members appeared in the leading European physical journals. They often gained experience abroad, working at the European scientific centers. In the 1920s, the physicists from other countries became the full members of the Shevchenko Scientific Society. Among them were Max Planck, Albert Einstein, Stepan Tymoshenko, Mykola Krylov, Dmytro Rozhansky and Abram Ioffe.

Keywords: Shevchenko Scientific Society, physics, history of science

The Shevchenko Scientific Society and Physics

The Shevchenko Society was established in Lviv in 1873 with the aim to assist the development of Ukrainian literature, so at the beginning of its activity it mainly performed literary and publishing functions. 1892 witnessed a critical change in the way the Society functioned. A new Charter was adopted and as a result, the Society was transformed into the Shevchenko Scientific Society, following the example of other existing scientific societies. A newly established society was viewed as a progenitor of the Ukrainian Academy of Sciences. The Scientific Society had a clear organizational structure, consisting of three sections: the Historical-Philosophical Section, the Philological Section and the Mathematical-Natural Sciences-Medical Section. In 1892, the scholarly journal "Zapysky naukovohto tovarystva im. Shevchenka" (*"Annals of the Shevchenko Scientific Society"*) was issued and became the Society's major publication. The Mathematical-Natural Sciences-Medical Section started publishing its own periodical in 1897 titled "Zbirnyk Matematychno-pryrodopysno-likarskoi sekti naukovoho tovarystva im. Shevchenka" (*"Proceedings of the Mathematical-Natural Sciences-Medical Section of the Shevchenko Scientific Society"*) (hereinafter, the "Proceedings of the Mathematical-Natural Sciences-Medical Section"). It was the first Ukrainian-language journal in the field of natural sciences, mathematics and medicine where the articles dedicated to Physics were regularly published. Some scientific papers on Physics are also found on the pages of the "Literaturno-naukovyi vistnyk" (*"Literary scientific herald"*), which was issued by the Shevchenko Scientific Society from 1898 to 1932.

The Ukrainian-language works of the physicists, who were the members of the Shevchenko Scientific Society, have played a decisive role in the development of Ukrainian physics terminology. In general, those publications can be roughly divided into the following groups:

1) various publications and articles preceding the establishment of the "Proceedings of the Mathematical-Natural Sciences-Medical Section". In this respect, a few works must be mentioned, i.e. the first original Ukrainian-language textbook on Physics written by Petro Ohonovsky and the first part of the terminology dictionary compiled by Volodymyr Levytsky (*Lewyćkyj, Lewicki*) (published in the "Annals of the Shevchenko Scientific Society" (1895, vol. 11));

2) articles which appeared in the "Proceedings of the Mathematical-Natural Sciences-Medical Section";

3) other publications such as textbooks on Physics, articles in the "Ukrainian General Encyclopedia" (edited by Ivan Rakowsky [*Ivan Rakovśkyj*]) and popular scientific articles (which appeared in different periodicals) written by the Shevchenko Scientific Society members.

Having taken into account all the above-mentioned publications, the "Proceedings of the Mathematical-Natural Sciences-Medical Section" played a central

role. From 1897 to 1938, a total of 74 papers dedicated to Physics were published, among them 3 terminological and 10 bibliographical articles. A number of physical terms could be found in V. Levytsky's terminology dictionaries (part 1 – mechanics ("Annals of the Shevchenko Scientific Society", 1895, vol. 11); part 2 – mechanics of fluids and meteorology ("Proceedings of the Mathematical-Natural Sciences-Medical Section", 1898, vol. 3); part 3 – magnetism, electricity and electrical engineering (ibid., 1898, vol. 3); part 4 – acoustics and optics (ibid., 1902, vol. 8), as well as in the mathematical and chemical dictionaries compiled by the scientist ("Proceedings of the Mathematical-Natural Sciences-Medical Section", 1902, vol. 8; ibid., 1903, vol. 9), the geographical dictionary compiled by Stepan Rudnytsky (ibid., 1908, vol. 12). Some of the articles published in the "Proceedings of the Mathematical-Natural Sciences-Medical Section" were supplemented by the terminology dictionaries. Apart from V. Levytsky, who was indefatigable chief editor, the following physicists contributed to publication of the "Proceedings of the Mathematical-Natural Sciences-Medical Section": Ivan Puluĵ (also known as *Johann Puluĵ*), Julian Hirniak, Roman Tsehelsky (*Cehel'skyj*), Volodymyr Kuczer (*Kučer*) and Ivan Feshchenko-Chopivsky (*Feščenko-Čopiv'skyj*). It was because of their works that the Ukrainian terminology in the field of Physics was formed, literally on the pages of the "Proceedings of the Mathematical-Natural Sciences-Medical Section".

The first articles on Physics are characterized by the use of folk ("vernacular") terms. The problem of choosing between international and national terms which was addressed in the discussion initiated by I. Horbachevsky and V. Levytsky ("Proceedings of the Mathematical-Natural Sciences-Medical Section", v. 10, 1905), had also concerned the establishment of physics terminology. However, the increase in the number of Ukrainian-language publications on Physics and active use of the Ukrainian language as a language of science, facilitated the development of advanced terminology in the field of Physics. The process had also been fostered by the terminological discussions on the pages of the "Proceedings of the Mathematical-Natural Sciences-Medical Section", the publication of terminological dictionaries in the above-mentioned journal, as well as other periodicals. It is also worth mentioning the works of the scientists and physicists from Dnipro Ukraine who had greatly contributed to the publication of the journal. Together, the scientists of the Shevchenko Scientific Society and the All-Ukrainian Academy of Sciences adopted the unified Ukrainian orthography, which was used in the publications of the Shevchenko Scientific Society starting in 1929. The repressions against the Ukrainian scientific language and its promoters, which swept across Soviet Ukraine in the 1930s, did not target the publications of the Shevchenko Scientific Society for obvious reasons. Those were the circumstances under which the Ukrainian scientific terminology was formed. The necessity of establishment of the Ukrainian terminology was declared in the preface to the "Proceedings of the Mathematical-Natural Sciences-Medical Section" (vol. 1, 1897), "*Our language will be able to acquire high and respectable status only when it evolves and*

reaches the level of the educated languages of other European nationalities, having become the medium of coherent and distinct expression of thought in all the fields investigated by the human mind."

In 1899, ten people were elected full members (or, using modern terminology, academicians) of the Mathematical-Natural Sciences-Medical Section, namely Hryhoriy Velychko, Ivan Verkhratsky, Ivan Horbachevsky, Osyp Dakura, Volodymyr Levytsky, Petro Ohonovsky, Evhen Ozarkevych, Ivan Puluji, Felix Selsky and Oleksander Chekhivsky (*Olexandr Chekhivsky*). Among these members of the Shevchenko Scientific Society, only three worked in the field of Physics: Ivan Puluji, Volodymyr Levytsky and Petro Ohonovsky. On January 29, 1908, Julian Hirniak, who could now be called an expert in the field of physical chemistry, was elected full member of the Society. A bit later, on March 18, 1914, Roman Tsehelsky was elected full member of the Society, and on September 2, 1919 Volodymyr Kuczer was elected. All three of the above-mentioned scientists were the graduates of the Philosophical Faculty of the Lviv University. Their life journeys closely intertwined with the activities of clandestine Ukrainian University in Lviv, another Ukrainian higher education institution.

The scientists of the Shevchenko Scientific Society in general, particularly the physicists, had extensive international contacts. The Shevchenko Scientific Society Library was regularly replenished by the books and journals dedicated to physics and mathematics. Initially, the bibliographies on physics and mathematics appeared on the pages of the "Proceedings of the Mathematical-Natural Sciences-Medical Section". Among the articles published in the above-mentioned journal one could find works of the scientists from Dnipro Ukraine. The works of the Shevchenko Scientific Society members appeared on the pages of the leading European physical journals such as "Proceedings of the Royal Society", "Annalen der Physik", "Zeitschrift für Physik", "Science", "Acta Physica Polonica", in the reports of the Vienna and Polish Academies of Sciences. Internships in the leading European centers of physics research were widely practiced as well.

Starting from the 1920s, a number of natural scientists from other countries had been elected full members of the Shevchenko Scientific Society. Among them there were a few physicists, namely one of the founders of quantum theory Max Planck (elected full member of the Shevchenko Scientific Society on March 13, 1924), creator of the theory of relativity Albert Einstein (March 17, 1929) both of whom were from Germany, scientist in the field of mechanic Stepan Tymoshenko (June 1, 1923) from the USA and the scientists from the Soviet Union, namely in the fields of mechanic and mathematics Mykola Krylov (March 24, 1927), radiophysicist Dmytro Rozhansky (April 13, 1929) and organizer of physics research in the USSR Abram Ioffe (March 28, 1929). The letters written by these scientists to the Presidium of the Shevchenko Scientific Society, which testify to their recognition of the Society as a respectful and highly professional organization, are preserved.

At the same time on April 6, 1926, Ivan Feshchenko-Chopivsky, an expert in the field of metal physics, was elected member of the Society. Professor Feshchen-

ko-Chopivsky's work poses interest as his students who also majored in metal physics, later joined the Shevchenko Scientific Society. Thus, on March 24, 1938, Evhen Perkhorovych (*Evhen Perchorovyč*) and Mykola Dubovytsky (*Mikołaj Dubowicki*) were elected full members of the society. Taking this into account, it could be concluded that certain groups or schools led by distinguished physicists started to emerge among the members of the Shevchenko Scientific Society. In the 1930s, physicist Vasyl Milianczuk (*Basil Milianczuk*) (September 28, 1938) as well as Doctors of Philosophy Oleksander Smakula (*Alexander Smakula*) (December 1, 1930), Zenon Khraplyvy (also known as *Zenon Chraplywyj / Chraplyvy*) (January 3, 1934), Andrij Lastoveckyj (*Andrzej Lastowiecki* in Polish or *Andreas Lastowetzki* in German) (June 14, 1933) and Ostap Stasiw (March 30, 1936) were elected members of the Society.

Given the chronological frameworks selected for the given article, the list of the scientists who were full members of the Shevchenko Scientific Society, will only include those who had been elected before 1939. The Shevchenko Scientific Society in Lviv had officially existed until January 14, 1940, when its dissolution was announced at the general meeting. In the time of the German occupation, the Society continued its work in Lviv, although its activities had not been officially legalized. In the post-war period, some of the aforementioned scientists emigrated or continued to work in Lviv. Others faced the grim fate of becoming war victims or were sent to the concentration camps. In 1947, the Shevchenko Scientific Society was reestablished in Western Europe and the USA, while in Ukraine it had ceased its activities for quite a long time (until 1989). Volodymyr Kuczer, Volodymyr Levytsky, Vasyl Milianczuk and Roman Tsehelsky stayed in Lviv. From 1897 to 1939, 21 scientists who conducted research on Physics had become full members of the Shevchenko Scientific Society. In the following section of the given article the short outlines of the biographies of the aforementioned scientists as well as their connection to the Shevchenko Scientific Society will be presented.

Physicists in the Shevchenko Scientific Society

Volodymyr Levytsky

Volodymyr Levytsky (*Lewyćkyj, Lewicki*; December 19, 1872, Ternopil – July 13, 1956, Lviv) was a Ukrainian mathematician (specialist in the field of theory of analytic functions) and a public figure. He was awarded the titles of Doctor of Philosophy (1901) and Professor of the Lviv University (1940). He was a co-founder of the Petro Mohyla Society for Scholarly Lectures (1907). Starting from 1899, V. Levytsky had been full member of the Shevchenko Scientific Society, and later became deputy Chairman (1926-1932) and Chairman (1932-1934).

It is difficult to overestimate V. Levytsky's role in the establishment of the Shevchenko Scientific Society as a full-fledged scientific and organizational unit,



Volodymyr Levytsky. *LNNB*.

where both natural science and mathematical disciplines were presented. After the Shevchenko Scientific Society was reorganized (1892) and the Mathematical-Natural Sciences-Medical Section was created, he became one of the key members of the Society. In February 1897, at the suggestion of the then Chairman of the Shevchenko Scientific Society Mykhailo Hrushevsky, the decision was made to publish the "Proceedings of the Mathematical-Natural Sciences-Medical Section" and together, V. Levytsky and I. Verkhratsky performed the duties of the editors. V. Levytsky edited the articles on mathematics, physics and chemistry, remaining in that position from 1897 when the first volume of the journal was published, to 1939 when the last (thirty second) volume came out.

It was V. Levytsky who was entrusted with task of coinage of Ukrainian scientific terminology, physics terminology in particular. The materials on terminology in various fields of physics were first published on the pages of the "Annals of the Shevchenko Scientific Society" (vol. 11) and then in the "Proceedings of the Mathematical-Natural Sciences-Medical Section" (vol. 3; vol. 8, issue 2). V. Levytsky was also the author of a voluminous (672 pages) Ukrainian-language textbook

on Physics for high school students and a number of popular science articles on Physics that he published in the journal "Uchytel" ("The teacher"), namely "Another world, or the fourth dimension of space", "The aether of space", "On the recent advances in physics", "Electrostatic machines" and others. Most of V. Levytsky's scientific works were devoted to the theory of analytic functions, although his studies into the theory of differential and integral equations, algebra and geometry are well known as well. All in all, he was the author of over 100 scientific papers; he had published many popular scientific articles and translations. V. Levytsky's works in the field of Physics included "Elektromagnetyczna teoria swiatla" ("Electromagnetic theory of light") (Sprawozdanie c.k. gimnazjum w Tarnopolu, 1897) and "Theory of Saturn's rings" ("Proceedings of the Mathematical-Natural Sciences-Medical Section", 1901, vol. 7, issue 2, pp. 1-46).

Petro Ohonovsky

Petro Ohonovsky (July 20, 1853, village of Chahriv, Rohatyn district, Ivano-Frankivsk region – February 9, 1917, Vienna) was a Ukrainian public figure, an edu-



Petro Ohonovsky and his textbook on Physics. LNNB.

cationalist, a scientist, a full member of the Shevchenko Scientific Society (since 1899), a teacher in the Ukrainian Academic Gymnasium in Lviv and Chairman of the "Prosvita" Society (*"Enlightenment" Society*) (1906-1912). He was the author of the first original textbook on Physics in Ukrainian, which was entitled "Textbook on Physics for lower secondary schools" (first edition – 1897, second edition – 1910).

From 1866 to 1873, P. Ohonovsky studied at the Gymnasium in Berezhany and later studied at the universities in Lviv and Vienna. In Vienna he took an active part in work of the "Sich" Society, being a member of its board and later obtaining the position of the secretary and Chairman. Upon graduating from the Philosophical Faculty, P. Ohonovsky started to work as a teacher, holding the position of Professor of Physics and Mathematics in the Academic Gymnasium in Lviv (1885-1910). P. Ohonovsky was also a distinguished member of the "Prosvita" Society. In 1892, he was elected honorary member of the above-mentioned Society, and was later elected as its Chairman (1906-1912). Two of his brothers (Omelyan Ohonovsky (1833-1894), a linguist and a literary scholar, a writer and a public figure; and Oleksander Ohonovsky (1848-1891), a legal scholar and a public figure) were appointed Professors of the Lviv University and were among the founding members of the Shevchenko Scientific Society.

Ivan Puluj

Ivan Puluj (February 2, 1845, Hrymailiv, Husiatyn district, Ternopil region – January 31, 1918, Prague) was a Ukrainian scientist who specialized in the fields of Physics and electrical engineering, Doctor of Philosophy, a full member of the Shevchenko Scientific Society (since 1899), a translator of the Bible into Ukrainian (1903, together with P. Kulish), a public figure (founder of the Society of Ukrainian Theologians in Vienna [1865]), a co-founder (1868) and Chairman (1872-1873) of the student Society "Sich", Professor (since 1884) and rector (1889-1890) of the German Higher Technical School in Prague. I. Puluj is well known for his work in the field of kinetic molecular theory of gases and electrical engineering, introduction of a new vacuum lamp design as well as study of cathode rays and X-rays.

Now the name of Ivan Puluj is returning to Ukraine and, in good sense, becoming the part of the Ukrainian mass culture. The streets and educational institutions of some Ukrainian cities as well as prestigious scientific awards are now named after Ivan Puluj. Children have a chance to read about the scientist on the pages of their school textbooks and see his portraits in physics classrooms. In general, Google displays more than 400 000 (!) pages upon the query "Puluj". Not long ago, it was something unthinkable, as in interwar Poland one of the few publications about I. Puluj appeared in the special edition of the "Proceedings of the Mathematical-Natural Sciences-Medical Section" (vol. 27, 1928) to commemorate the 10th anniversary of his death and in Soviet Ukraine his name was stained



Ivan Puluj. *LNNB*.

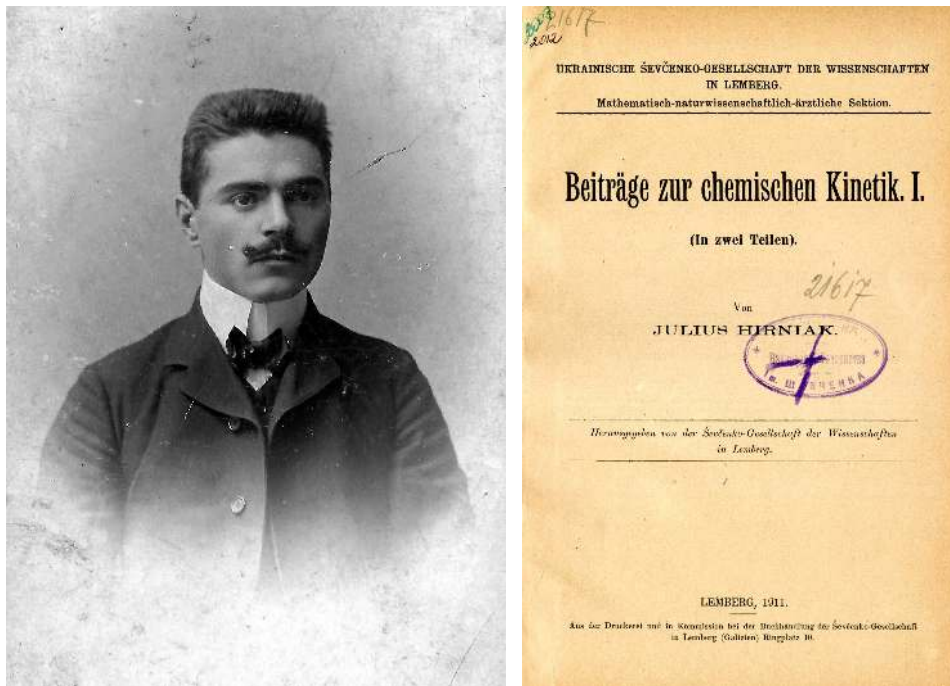
(being on the list of Ukrainian bourgeois nationalists), so one could only wonder at the courage and civic stand of the scholars who dared to mention Ivan Puluj in their publications or speeches. One more way people could learn about I. Puluj at that time was the work of Czech researcher Yurii Hryvniak. After Ukraine had gained independence, the situation changed. A monograph written by R. Gayda and R. Plyatsko was published (the authors summarized the results of long and detailed studies of the life and work of their fellow citizen); V. Shenderovsky and V. Kozyrsky published a collection of I. Puluj's works; and his letters were published by O. Zbozhna.

In today's diversified expertise in science, it is difficult to find an example of a scientist who would be a leading expert in several fields of science and technology. I. Puluj had managed to be the leading scientist in several fields for decades, conducting research on molecular physics, electrical engineering, physics of cathode rays and X-rays. His studies of the internal friction in gases and gas diffusion through porous diaphragms made a significant contribution to kinetic molecular theory, refining and supplementing the results obtained by his predecessors. The study of the characteristics of the above-mentioned processes

for different gases made it possible to determine the subtle nuances of the internal structure of matter (the length of free path of molecules, their number in a given volume, etc.) and thus, provided additional arguments in favor of the kinetic molecular paradigm. I. Puluž's works dedicated to electrical engineering instantly made him a recognized European authority in his field: electric lamps made using the technologies offered by I. Puluž proved to be better than T. Edison's lamps; I. Puluž was a pioneer in the study of "cold" (neon) light; he was engaged in the process of improvement of the design of the telephone exchange stations and supervised the erection of a number of power plants in the Czech Republic, including a central station in Prague and a large hydroelectric plant not far from Hohenfurth. Nowadays, the name of I. Puluž is frequently mentioned in relation to the discovery of X-rays (Röntgen rays). However history in general, and the history of science in particular, does not tolerate the subjunctive mood. One cannot change history, so it was not I. Puluž, but Wilhelm Röntgen, who was awarded the first Nobel Prize in Physics in 1901, *"in recognition of the extremely important contribution to science, namely the discovery of the rays which were named in his honor."* However, even if we consider the achievements generally recognized by the scientific community, I. Puluž clearly stands out from other scholars who were his contemporaries. In the same way that his studies on the properties of gases contributed to the establishment of molecular physics, his studies of physical processes in gas-discharge tubes paved the way for the formation of atomic physics. In the above-mentioned series of articles "Radiant electrode matter" (1880-1882), the scientist argued that cathode rays are streams of negatively charged electrode particles. Thus, he was ahead of many of his contemporaries in terms of correct understanding of the nature of the cathode rays as a stream of electrons (experimentally discovered by Joseph Thomson only in 1897). 14 years before W. Röntgen's discovery, I. Puluž designed a tube that emitted X-rays and it was he who discovered the ionizing properties of those rays. The X-ray pictures he took with the help of his tube were of the highest quality at that time.

Julian Hirniak

Julian Hirniak (September 8, 1881, village of Strusiv, Terebovlia district, Ternopil region – June 5, 1970, Passaic, New Jersey) was a Ukrainian chemist and a physicist, Doctor of Philosophy, a publicist, a full member of the Shevchenko Scientific Society (since 1908), Professor of the newly established Ukrainian State University in Kamianets-Podilsky (1918), Professor of the clandestine Ukrainian University (1920) and rector of the underground Ukrainian Higher Polytechnic School in Lviv. In the 1930s, he belonged to the famous club of Lviv mathematicians "Scottish Café". J. Hirniak investigated the effect of changing the concentration of a substance on the course of a chemical reaction. He was the author of works in the field of physical and chemical kinetics. It was he who theoretically substantiated



Julian Hirniak, 1901 (*Jozef Hirniak's collection*) and his monograph.

the possibility of periodic chemical reactions, which later came to be known as Belousov-Zhabotinsky reactions.

Being a student, J. Hirniak made first attempts to promote the achievements of that time's science and technology, publishing articles in Lviv monthly publications for the youth, namely "Iskra" ("The spark"), "Na rozsviti" ("At dawn"), as well as the journals "Iliustrovana Ukraina" ("Illustrated Ukraine") and "Literaturno-naukovyi vistnyk" ("Literary scientific herald"). I. Puluj noticed that he was a capable student and invited J. Hirniak to his laboratory. In the 1904/1905 academic year (winter semester), J. Hirniak worked in Prague under I. Puluj's supervision. At that time, the scientist investigated thermal conductivity of aqueous sugar solution. Based on the results of the given work J. Hirniak was awarded a Ph.D. degree in Lviv (1905).

J. Hirniak is known for his works in the field of physical and chemical kinetics, studies of the effect of synchronous change of concentration on the course of chemical reactions and dependence of the rate of chemical reactions on temperature. The scientist had mathematically substantiated the effect of the periodic repetition of chemical reactions in homogeneous media. Complex solutions obtained by solving systems of differential equations (which were rejected by

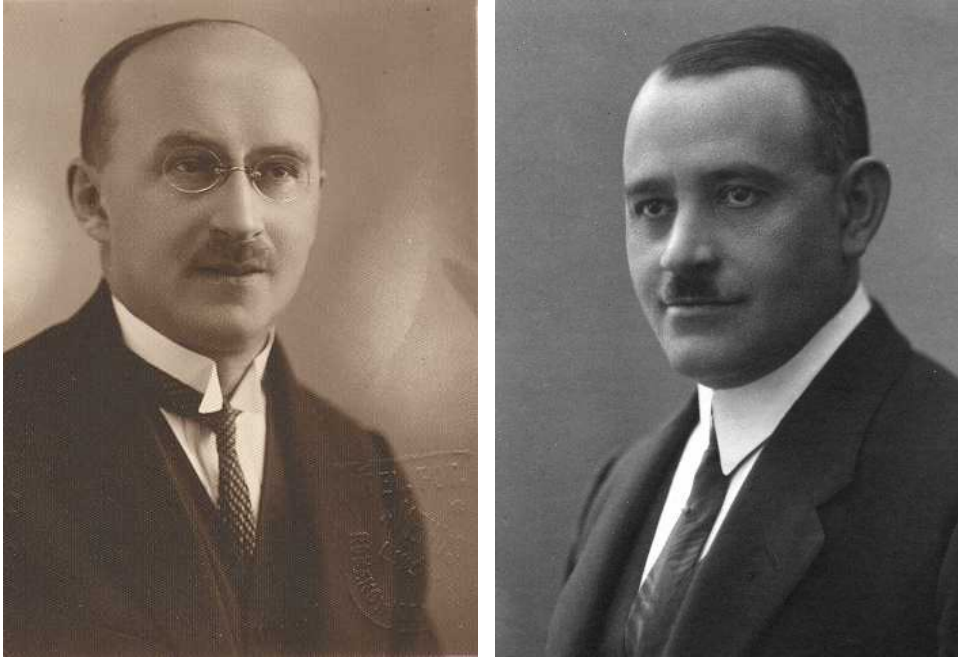
researchers as ones having no physical interpretation) were presented by J. Hirniak as trigonometric functions. In that way, he was able to show that the change of concentration in a chemical process could be described by the periodic functions of sine or cosine. J. Hirniak's work on the change of the concentration of a substance in the course of a chemical reaction (1908) was not commonly cited. The results of the research undertaken by the scientist became more widely known due to A. Lotka. The famous Lotka-Volterra model, which is now largely known for its use in describing the dynamics of biological systems (prey-predator), was initially aimed at describing autocatalytic chemical reactions, according to A. Lotka. For quite a long time J. Hirniak's work had been forgotten or silenced. However, in an article on the first theoretical models of oscillatory behavior in chemistry published in the 100th anniversary issue of the "Zeitschrift für physikalische Chemie" in 1987, E. Brückner noted that A. Lotka's article was submitted to the journal on January 31, 1910, while J. Hirniak's article was received on November 22, 1910. It should be noted that the preliminary results of J. Hirniak's work were published in the "Proceedings of the Mathematical-Natural Sciences-Medical Section" in Ukrainian back in 1908. In general, the discovery of periodic chemical reactions (later known as Belousov-Zhabotinsky reactions) gave impetus to the development of such branches of modern science as synergetics, dynamical systems theory and deterministic chaos. Their importance is evidenced by the fact that for his study of complex dissipative systems, self-organization and irreversibility in open systems, I. Prigogine was awarded the Nobel Prize (1977).

Roman Tsehelsky

Roman Tsehelsky (*Cehel'skyj*; July 12, 1882, Kamianka-Strumylova (now Kamianka-Buzka), Lviv region – October 3, 1956, Lviv) was a Ukrainian physicist, Doctor of Philosophy (1911), one of the founders of the clandestine Ukrainian University in Lviv (1919-1925), Professor (1939), an educationalist and public figure and a full member of the Shevchenko Scientific Society (1914). He was engaged in the development of education and terminology in the field of Physics. R. Tsehelsky was the author of several school textbooks on Physics.

In 1900, R. Tsehelsky entered the Lviv University and studied in the Department of Mathematics and Natural Sciences of the Philosophical Faculty. It was the time, when the situation at the University was quite tense, as the Austrian authorities demonstrated strong preference for Polish students over Ukrainian. After two Ukrainian students had been killed, many Ukrainians left the Lviv University in an act of protest and went on to study in other European universities, where they were treated without bigotry. Having completed the second year of his studies, R. Tsehelsky first went to Prague, and later to Chernivtsi, where he was awarded the diploma with honors (1904).

In 1911, the University in Chernivtsi granted R. Tsehelsky the degree of Doctor of Philosophy for his work "Über das Sieden von Elektrolyten bei Stromdurch-



Roman Tsehelsky (on the left) and Volodymyr Kuczer. *LNNB*.

gang" (*"Electrolyte boiling at electric current passage"*). The scientist belonged to the group of enthusiasts who worked hard to develop education and science in Galicia and Bukovyna. Thus, for the considerable contribution to the development of experimental physics, the theory of relativity, and unification of scientific terminology, the Shevchenko Scientific Society elected him full member in 1914. Later, he was elected full member of the Presidium of the Society, performing the duties of the secretary.

Before the outbreak of World War II, R. Tsehelsky participated in various scientific congresses and conferences on behalf of the Shevchenko Scientific Society. Upon the dissolution of the society in 1940, R. Tsehelsky ceased his scientific work and mainly focused on teaching.

Volodymyr Kuczer

Volodymyr Kuczer (*Kučer*; October 18, 1885, Tluste (now Tovste), Ternopil region – August 29, 1959, Lviv) was a Ukrainian scientist and theoretical physicist, an educationalist, Doctor of Physical and Mathematical Sciences, a full member of the Shevchenko Scientific Society (1919), Professor and one of the founding members of the clandestine Ukrainian University in Lviv (1920-1925). V. Kuczer



Lecture index of Volodymyr Kuczer, a student of the Lviv University. Collection of the Kuczer's family.

gained recognition due to his study of equations of motion of quantum particles and light pressure. His scientific interests concerned quantum theory of solids, quantum statistics and special relativity theory.

V. Kuczer started his scientific research being a university student. In 1909, he published his first paper, "Fundamentals of electronics", in the "Proceedings of the Mathematical-Natural Sciences-Medical Section". In 1915, V. Kuczer defended his thesis "Eine allgemeine Formel für den Strahlungsdruck" ("The general formula of radiation pressure") and was granted a Ph.D. degree from the University in Vienna. In September 1916, he returned to Lviv where he combined pedagogical work with scientific research.

In 1929, with the financial support of the Shevchenko Scientific Society, V. Ku-

czek went to Germany with the aim to undergo advanced scientific training at the Kaiser Wilhelm Institute in Berlin. It was there that he met with Max Planck and Walther Nernst and had the chance to participate in their seminars. In 1930, as a delegate from the Shevchenko Scientific Society, V. Kuczer took part in the first All-Union Congress of Physicists where he established a bond with renowned physicist Wolfgang Pauli. He had also promoted scientific knowledge publishing articles in the journal "Dukhovnyi siiach" (*"The spiritual purveyor"*). He worked at the "Prosvita" Society, the Petro Mohyla Society for Scholarly Lectures and other educational institutions. V. Kuczer considered it his civic duty to travel to the villages of Lviv region on Sundays and communicate with the peasants in the reading halls of the libraries.

Stepan Tymoshenko

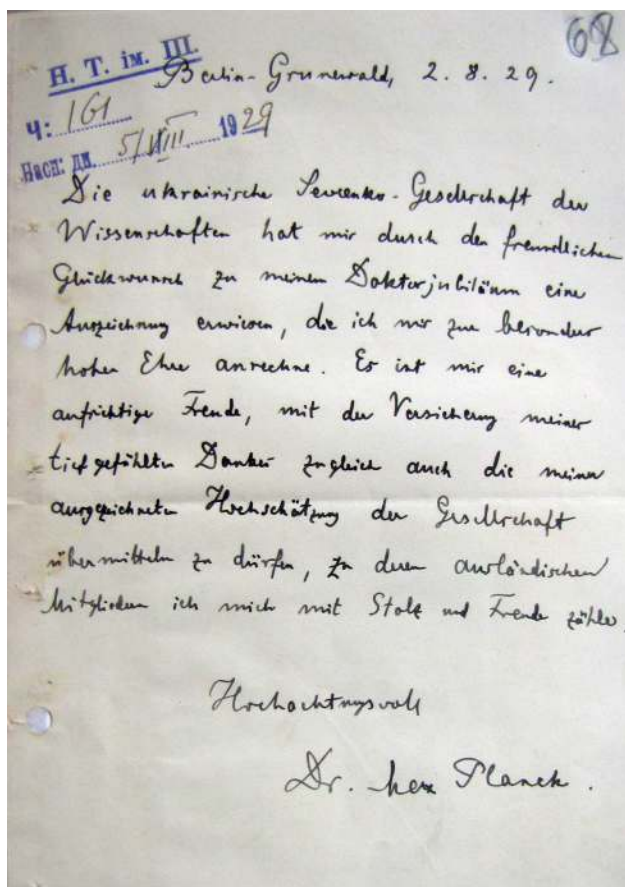
Stepan Tymoshenko (December 11 (23), 1878, village of Shpotivka, Sumy region – May 29, 1972, Wuppertal, Germany) was a Ukrainian scientist in the field of mechanic, Professor, a member and a co-founder of the Ukrainian Academy of Sciences (November 14, 1918), a full member of the Shevchenko Scientific Society (1923), an honorary member of several academies of sciences and scientific societies, Honorary Doctor of the most prominent universities in many countries of the world. S. Tymoshenko is considered to be the "father of theoretical mechanics"; he solved the problems of the stress concentration near the holes and the strength of iron rails.

After defending his thesis in 1906, S. Tymoshenko was appointed Professor of the Department of Resistance of Materials of the Kyiv Polytechnic Institute. In 1919 and 1920, he was a member of the Ukrainian Academy of Sciences, the first director of the Institute of Technical Mechanics (now Stepan Tymoshenko Institute of Mechanics of the National Academy of Sciences of Ukraine). Tumultuous times, a change of power and the Bolsheviks' aggression forced S. Tymoshenko to emigrate to Yugoslavia, where in 1920 and 1921, he held the position of Professor of the Zagreb Polytechnic Institute. In 1922, he moved to Philadelphia (USA). Starting in 1923, he was a scientific consultant at the *Westinghouse* company and managed to write several scientific and technical papers at the same time. S. Tymoshenko established the Section of Mechanics at the American Society of Mechanical Engineers (1927). From 1927 to 1936, he held the title of Professor of the University of Michigan and headed the Department of Mechanical Research. In September 1936, he was appointed Professor of the Department of Mechanics of Stanford University (California). He went to the Soviet Union twice, visiting several Ukrainian cities as well. Part of S. Tymoshenko's library was handed over to the Department of Physical and Mathematical Sciences of the National University of Kyiv-Mohyla Academy.

Max Karl Ernst Ludwig Planck

Max Planck (April 23, 1858, Kiel, Germany – October 4, 1947, Göttingen, Germany) was a German theoretical physicist, one of the founders of quantum theory.

M. Planck was elected full member of the Shevchenko Scientific Society on March 13, 1924. We do not know whether he had got any connection with the Shevchenko Scientific Society before that time. Yet as it has already been mentioned, in 1929, V. Kuczer worked the Institute of the Kaiser Wilhelm Society in Berlin, which was headed by Max Planck (in 1948, it was renamed the Max Planck Society [*Max-Planck-Gesellschaft zur Förderung der Wissenschaften*]).



Max Planck's letter, dated August 2, 1929, written in response to the congratulations from the Shevchenko Scientific Society on the 50th anniversary of the defense of his doctoral thesis. *CDIAL*.

In response to the announcement of his being elected full member of the Shevchenko Scientific Society, Max Planck wrote a letter, testifying that he was aware of the activities of the Shevchenko Scientific Society as well as political standing of Ukraine in the world, *"I consider my election to be a mark of great honor and... I would be proud to be a member of this respectable organization... And, on the occasion of the 50th anniversary of its foundation, I would like to express my sincere wishes for further development and prosperity of the Society. I believe that you know that in Germany Ukrainian culture sparks lively interest and the Ukrainian political struggles are fully and loyally supported..."*. In the Shevchenko Scientific Society Archive we have found one more letter from M. Planck. Based on the content of the letter, we have concluded that it was written in response to the congratulations from the Shevchenko Scientific Society on the 50th anniversary of M. Planck's defense of his doctoral thesis.

Ivan Feshchenko-Chopivsky

Ivan Feshchenko-Chopivsky (*Feščenko-Čopivskýj*, January 20, 1884, Chudniv, Zhytomyr region – September 2, 1952, Abez, Komi Republic, concentration camp) was a Ukrainian scientist, a well known specialist in the field of metal science and metallurgy, an avid promoter of science, Minister of the Central Council (*Centralna Rada*) of Ukraine and the Directorate of the Ukrainian People's Republic and a full member of the Shevchenko Scientific Society. He was the author of more than one hundred scientific works and textbooks on metallurgy. His major scientific achievements concerned the development of new methods of chemical-thermal treatment of metals, the study of magnetic materials, the problems of controlled metallurgy and mechanical engineering as well as applied problems of industry.

I. Feshchenko-Chopivsky is an extraordinary example of the personality who was both a prominent scientist and political figure. He was promoted from the position of head of the Kyivan Governorate (1917) to the head of the Parliament of the Council of the Ukrainian Republic in exile (1921), which he had been in charge of for 220 days (until August 15, 1921) by the decree of Symon Petliura. In the meantime, he was a member of the Central Council of Ukraine (1917) and was later the Minister of Commerce and Trade of the Ukrainian People's Republic, with the government being led by V. Holubovych (1918). In the times of the Hetmanate, I. Feshchenko-Chopivsky was arrested and taken to the Lukianiv prison, but soon released with the demand to leave Ukraine. In the times of the Directorate in 1919, he was appointed Minister of National Economy and starting from February 1919, he occupied the position of Minister and Deputy Prime Minister of the Directory in the government formed by S. Ostapenko. Later, I. Feshchenko-Chopivsky worked as an adviser to the Ukrainian mission in Romania. In 1920, he was appointed Chairman of the Ukrainian Economic and Military Commission in Warsaw.



Ivan Feshchenko-Chopivsky. *Wikipedia.*

Starting from 1922, I. Feshchenko-Chopivsky held the position of Professor of Metallurgy and Metallography of the Academy of Mining and Metallurgy (*Akademia Górniczo-Hutnicza*) in Kraków. In collaboration with Bohdan Lepky and Ivan Zilynsky, Ivan Feshchenko-Chopivsky formed the informal Ukrainian “Big Three” in Kraków. In spite of working abroad, he did not lose touch with the Shevchenko Scientific Society. In 1923, he was elected member of the Mathematical-Natural Sciences-Medical Section of the Shevchenko Scientific Society. At the same time, he received an invitation from the rector of the underground Ukrainian Polytechnic (V. Luchkiv) to come to Lviv once a month to teach a course in metal science in the Department of Mechanical Engineering of the clandestine Polytechnic. Starting from 1925, he was actively cooperating with the Shevchenko Scientific Society reporting on his developments in the meetings of the Section and publishing his studies on cementation of metals in the “Proceedings of the Mathematical-Natural Sciences-Medical Section”. In 1926, he was elected full member of the Shevchenko Scientific Society and head of the Technical Commission.

Mykola Krylov

Mykola Krylov (November 17 (29), 1879, St. Petersburg – May 11, 1955, Moscow) was a scientist in the fields of mathematics and mechanic, Professor (1912), Doctor of Mathematics (1917), a member of the All-Ukrainian Academy of Sciences (1922), a full member of the Shevchenko Scientific Society (1927), a corresponding member of the USSR Academy of Sciences (1928) and then a full member of the USSR Academy of Sciences (1929).

We have decided to add M. Krylov, an eminent mathematician, to the list of physicists who were full members of the Shevchenko Scientific Society due to his work in the field of mechanics. In fact, in collaboration with Mykola Bogoliubov, he was the creator of an entirely new branch of mathematical physics, namely nonlinear mechanics, which was rapidly developing in the second half of the 20th century. A significant part of M. Krylov's life is connected with Ukraine, where he spent his childhood in the estate of his father in the village of Kovhanivka (now Brusyliv district, Zhytomyr region). From 1889 to 1897, he studied in the Cadet School in Kyiv. Because of health problems M. Krylov moved to Crimea (1915) where he became one of the founders of the Crimea (Taurida) University. In 1922,



Mykola Krylov.

he was elected full member of the All-Ukrainian Academy of Sciences, which made him move to Kyiv, where he was appointed head of the Department of Mathematical Physics of the Institute of Structural Mechanics of the All-Ukrainian Academy of Sciences. On March 24, 1927, he was elected full member of the Shevchenko Scientific Society. He worked painstakingly in Kyiv until the time it was occupied by the Germans. In 1943, M. Krylov moved to Moscow.

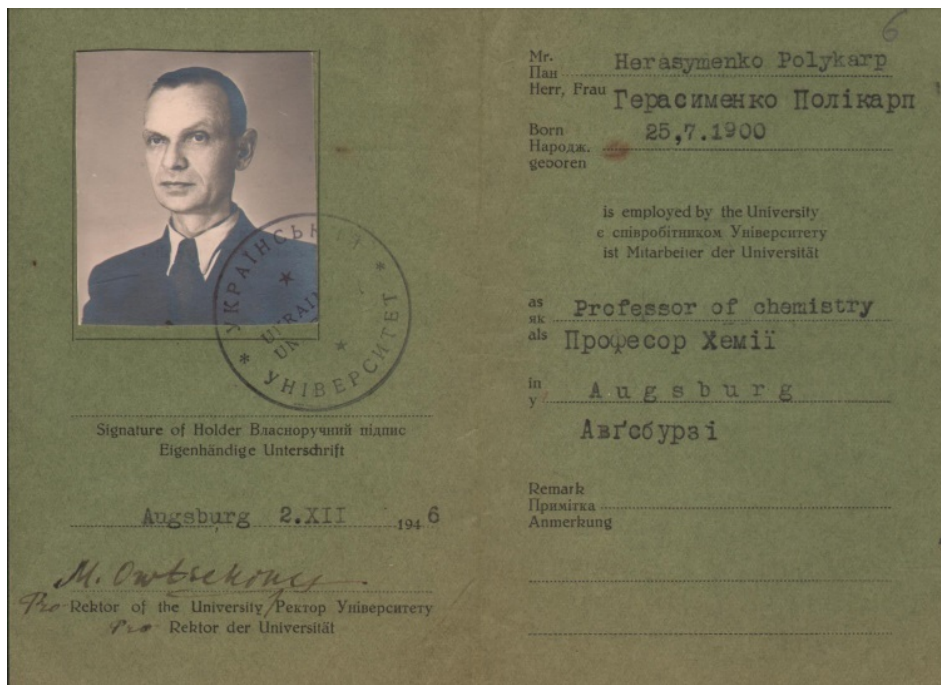
One of M. Krylov's works, which he co-authored with Mykola Bogoliubov, was published in the "Proceedings of the Mathematical-Natural Sciences-Medical Section". It concerned the theory of functions of a real variable and was written in 1928, when M. Bogoliubov was a postgraduate student studying under M. Krylov's supervision. It is worth mentioning that having finished the seven-year school in the village of Velyka Krucha (the only educational institution he completed studies in), Mykola Bogoliubov (being only 14 years old) participated in D. Grave's seminar in the Department of Mathematical Physics of the Kyiv University. In 1924, at the age of 15, he wrote his first scientific work. From 1925 to 1929, Mykola Bogoliubov studied under the supervision of M. Krylov in the postgraduate course of the Academy of Sciences of the Ukrainian SSR and was awarded a Ph.D. degree at the age of 20. It is worth mentioning that all three scientists were full members of the Shevchenko Scientific Society. In the 1930s, M. Krylov and M. Bogoliubov dealt with the problems of nonlinear oscillatory processes theory, which had paved the way for a new branch of science, i.e. nonlinear mechanics.

Polikarp Herasymenko-Volkovynsky

Polikarp Herasymenko (July 26, 1900, Odesa – April 6, 1958, New York) was a Ukrainian scientist, a specialist in physical chemistry, Doctor of Natural sciences (1925), a full member of the Shevchenko Scientific Society (1928), the author of the textbook "Theoretical physics" (Prague, 1925).

In 1921, P. Herasymenko emigrated to Czechoslovakia to escape arrest. In July 1927, being a lecturer in Physics and Chemistry at the M. Drahomanov Ukrainian High Pedagogical Institute in Prague, P. Herasymenko was habilitated and obtained the title of Assistant Professor. In some time, he founded the Physico-Chemical Laboratory there. During World War II, he was closely involved in the public processes of the Ukrainians in Prague. He was a member of the Ukrainian National Association (UNO) in the Czech Republic, performed the duties of the head of the Cultural and Scientific Publishing House under the auspices of the UNO and at the same time, was Chairman of the Engineering Section. Because of his activities P. Herasymenko was arrested in 1944 by the Germans and was sentenced to almost a year in prison, but with the establishment of the Soviet rule had to spend three more months in a communist prison.

After World War II, P. Herasymenko spent some time in a camp for displaced persons in Germany and went on to lecture at the Ukrainian Free University in



ID card of Polikarp Herasymenko, Professor of Chemistry of the Ukrainian Free University. CDAZU.

Munich. He initiated the creation of the Faculty of Natural Sciences at the University of Augsburg (Bavaria). For a short time he had headed the Ukrainian Political Prisoners' Association and had also been in charge of the local Organization of Ukrainian Nationalists (OUN), but later decided to withdraw from political activity. In 1948, P. Herasymenko emigrated to the United Kingdom at the invitation of the United Steel company (Sheffield). There he made several scientific translations, published a few articles and participated in the meetings of the London Scientific Society "Iron and Steel Institute". After that, he worked in the United States as a research scientist and starting from 1951, he had held the title of Professor of the Department of Metallurgy of the New York University.

Albert Einstein

Albert Einstein (March 14, 1879, Ulm, Germany – April 18, 1955, Princeton, New Jersey, USA) was a German-born theoretical physicist, one of the most outstanding scientists of all time.

Albert Einstein was elected full member of the Shevchenko Scientific Society

on March 17, 1929. Obviously, the given date was not chosen by chance – on March 15, 1929, Albert Einstein turned 50. In the archive of the editorial board of the journal “Novi shliakhy” (“New ways”) we have found an article written on March 14, 1929, by V. Kuczer. He wrote, “On March 15, Albert Einstein, one of the greatest scientists of the modern world, celebrated his 50th birthday. Nowadays, perhaps, there is no person who would consider themselves belong to the intelligentsia without knowing the name of this scientist...”. In a letter to the Shevchenko Scientific Society, which dates back to April 4, 1929, A. Einstein wrote, “Honorable gentlemen! I heartily thank you for having elected me a member of your respectable Society. I would always gladly accept the honor of being elected, no matter the names of other foreign scientists who belong to your Society. Sincere greetings, A. Einstein.” The letter was received on April 6 and registered No. 275 in the journal of incoming Shevchenko Scientific Society correspondence. However, we could not find the letter itself in the Central State Historical Archives of Ukraine, so it was translated citing the publication of S. Sherman (“Vilna Ukraina” (“Free Ukraine”), 1958, November 30). Based on A. Einstein’s answer, we can infer that the letter sent by the Shevchenko Scientific Society apparently referred to other prominent foreign scientists who were full members of the Society. At that time apart from Max Planck, full members of the Shevchenko Scientific Society were David Hilbert (a great German mathematician all-rounder, whose works helped Albert Einstein to formulate the general theory of relativity) and German mathematician Felix Klein. Both of them were elected on March 13, 1924; those were the scientists Volodymyr Levytsky bonded with when studying Mathematics in Göttingen in 1901.

Abram Ioffe

Abram Ioffe (October 17 (29), 1880, Romny, Poltava Governorate, Russian Empire – October 14, 1960, Leningrad, USSR [now St. Petersburg, Russian Federation]) was an organizer of physics research in the USSR, a founder of a large scientific school, also known as the “father of Soviet physics”.

Abram Ioffe was elected full member of the Shevchenko Scientific Society on March 28, 1929. At that time Stepan Tymoshenko, who A. Ioffe made friends with when studying at the Real School in Romny (1889-1897), had already been full member of the Shevchenko Scientific Society. In response to the announcement of his being elected, A. Ioffe wrote (the letter dates back to September 6, 1929), “To the Shevchenko Scientific Society in Lviv. Upon my return from a long overseas trip, I have received your notice dating back to May 3 this year that I was elected full member of the Shevchenko Scientific Society in Lviv. I gratefully accept such a high honor that has been conferred on me and confirm it with my own handwritten signature on the piece of your announcement which you will find attached. I would like to assure you of my willingness to assist the

Society with my involvement in the common work for the benefit of science. Academician A. Ioffe."

Dmytro Rozhansky

Dmytro Rozhansky (August 20 (September 1), 1882, Kyiv – September 27, 1936, Leningrad (now St. Petersburg)) was a physicist, Professor of the Kharkiv University (1911-1921), corresponding member of the USSR Academy of Sciences (since 1933). He was elected full member of the Shevchenko Scientific Society on April 13, 1929. D. Rozhansky's scientific interest concerned high frequency electronics, antenna theory and theoretical foundations of designing shortwave transmitters and electronic oscilloscopes. He was one of the founders of the impulse radar long-range detection method. The major works of the scientist were dedicated to electrical discharges and radiophysics. He was the founder of the Kharkiv school of radiophysics.

In 1910, D. Rozhansky introduced a method of oscillographic testing of fast electrical processes using the Braun tube. At the suggestion of O. Popov, he thoroughly studied the processes occurring in the spark at the high-frequency oscillatory discharge of the capacitor and revealed the nature of the spark discharge. The results of those studies D. Rozhansky outlined in the paper "The influence of a spark on the oscillating discharge of a capacitor" and based on that work he was awarded the Popov Prize. The scientist supervised the work on the creation of the first shortwave transmitters and the work on the stabilization of the frequency of the tube oscillator as well as the study of the propagation of short and ultra-short radio waves taking into account the properties of the ionosphere. Work on radio detection and location, which had been conducted at the Leningrad Institute of Physics and Technology under the supervision of D. Rozhansky resulted in the creation of the first Soviet pulse radars.

Oleksander Smakula

Oleksander Smakula (September 9, 1900, village of Dobrovody, Zbarazh district, Ternopil region – May 17, 1983, Auburn, USA) was a Ukrainian scientist and physicist, Doctor of Philosophy, Professor, a full member of the Shevchenko Scientific Society, the inventor of antireflection lens coating. O. Smakula was one of the founders of quantum organic chemistry. He was the author of scientific works and technologies which could be used for the study of heterogeneity of mixed crystals and formulas of physics of color centers in crystals that could be applied in the presence of deformation. O. Smakula designed many solid-state electronics devices, rare-earth lasers and nonlinear semiconductors. He was an inventor of thallium bromide, which is used in manufacturing of night vision devices.

In 1927, having successfully passed the exams at the University in Göttingen, O. Smakula was awarded the degree of Doctor of Philosophy and started working as an assistant at the Institute of Physics headed by Professor R. Pohl. Working in Germany, he tried to maintain ties with Ukraine. O. Smakula published articles in the "Dilo" ("*The deed*") newspaper and the journal "Tekhnichni visti" ("*Technical news*"). Being influenced by the scientific ideas of the time, O. Smakula was one of the first to apply the notion of quantum mechanics to the problem of describing the mechanisms of interaction of electromagnetic radiation with a solid. In 1930, the scientist published his famous article, where the concepts and parameters of quantum oscillators were used to describe the irradiation-induced coloring of crystals and the quantitative mathematical relation was offered (the Smakula formula). Later, O. Smakula focused on the problems of optics and spectroscopy of crystals. He started to run the Laboratory of Zeiss company in Jena in 1934. In 1935, he made a remarkable discovery: when the lens was covered with a thin coating (depth of $1/4$ of the wavelength), the reflection of light from the surface of the lens was significantly reduced and its optical properties were improved, i.e. the optics "cleared up" and therefore, more contrasted images could be obtained. This invention was patented by O. Smakula (Patent No. 685767 of the German Patent Office, dated November 1, 1935). Although the patent had remained secret for more than a year, O. Smakula's invention is now widely recognized. He was the author of over one hundred scientific papers and got many patents.

Vasyl Milianczuk

Vasyl Milianczuk (January 10, 1905, Dobrovidka, Kolomyia district, Ivano-Frankivsk region – November 3, 1958, Lviv) was a theoretical physicist, Doctor of Physical and Mathematical sciences, Professor and a full member of the Shevchenko Scientific Society (1932). V. Milianczuk held the position of head of the Department of Theoretical Physics of the Ivan Franko State University of Lviv (1946-1958). He developed the theory of the influence of inhomogeneous fields on the characteristics of atomic spectra. He was a well-known specialist in the field of quantum electrodynamics and general theory of quantum fields.

In 1932, still being a student, V. Milianczuk was elected full member of the Shevchenko Scientific Society. Apparently, it happened due to his active involvement in research work when he was a graduate student, and his constant desire to collaborate with the Shevchenko Scientific Society. While studying at the Gymnasium in Kolomyia (1924), he wrote a letter to the Shevchenko Scientific Society describing his collections of folklore and asking for information on writing down folk songs and parables. In some time, he started to review and edit the articles, which were published in the "Proceedings of the Mathematical-Natural Sciences-Medical Section". In 1931, the second Students Congress was held in Lviv and the Executive Committee of the Union of Ukrainian Student Organizations in Poland was created, where V. Milianczuk performed the duties of the

educational consultant. He had been involved in organizing students' cultural and educational work, conducting annual questionnaires and popular science presentations as well as performances in schools and in the countryside. In July 1931, the journal "Studentskyi shliakh" ("*Students way*") published V. Milianczuk's essay "Study courses at the higher schools in Poland".

The scientist had also edited the scientific collections published by the University staff. Some of Professor Vasyl Milianczuk's students later became prominent physicists. Among them were R. Gayda, I. Yukhnovskii, A. Svidzynsky and I. Taliansky. In 1955, thanks to the authority of V. Milianczuk, the Presidium of the USSR Academy of Sciences decided to hold the tenth Spectroscopy Meeting in Lviv (July 1956) inviting about one thousand participants from other cities. Scientific research conducted by V. Milianczuk at that time concerned the theory of perturbations of atomic spectra and the study of influence of inhomogeneous molecular field on atomic spectra. The results of his work were elucidated in the doctoral thesis "Influence of inhomogeneous intermolecular field on atomic spectra" (1957).



Vasyl Milianczuk. *Collection of Milianczuk's family.*

Andrij Lastowetzki

Andrij Lastowetzki (*Andrzej Lastowiecki* in Polish or *Andreas Lastowetzki* in German, August 31, 1902, Stanislaviv (now Ivano-Frankivsk) – September 11, 1943, Lviv) was a Ukrainian scientist and an educationalist, a lecturer in Physics at the Lviv University (since 1929), Professor of Physics of the Lviv Medical Institute (1939-1943), head of the Department of Experimental Physics (1939-1943), dean (1942-1943), a full member of the Shevchenko Scientific Society (since 1933) and the author of a school textbook on Physics in Ukrainian.

He studied at the clandestine Ukrainian University (1920-1922) which functioned under the auspices of the Shevchenko Scientific Society, and continued his studies of Physics and Mathematics in Vienna, Berlin and Bonn. After graduating from the University of Bonn, A. Lastowetzki returned to Lviv. Starting in 1929, the scientist worked as an assistant of Stanisław Loria in the Department of Experimental Physics of the Lviv University. While working at the University, he published his works on radiology in the scientific journal "Acta Physica Polonica". A. Lastowetzki was one of the initiators of the first Congress of Ukrainian Engineers and Technicians in Lviv (1932). He was elected full member of the Shevchenko Scientific Society in 1933, and worked in the Mathematical-Natural Sciences-Medical Section. In 1935, he was elected to the Presidium of the Society.

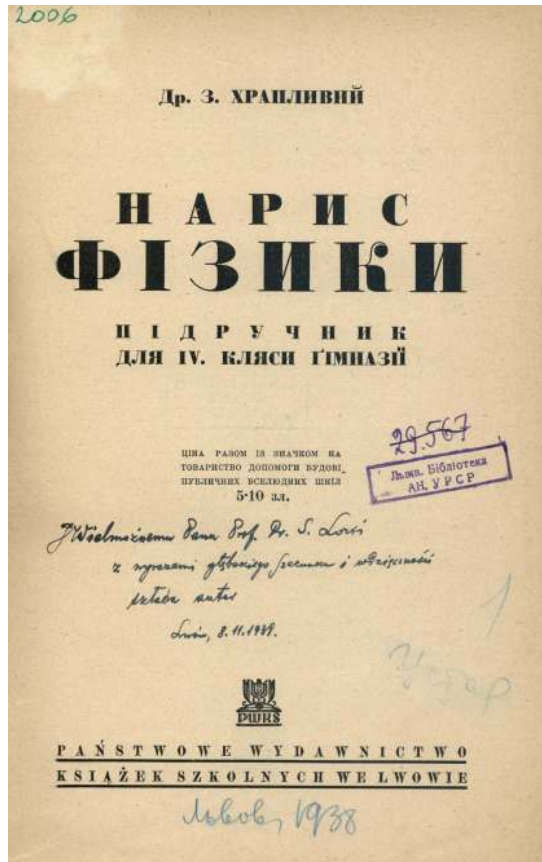


Andrij Lastowetzki with his wife and son. *Collection of Julian Redko's family.*

Zenon Khraplyvy

Zenon Khraplyvy (March 15, 1904, Lysivtsi, Ternopil region – October 1, 1983, South Bound Brook, USA) was a Ukrainian theoretical physicist, a high school teacher, Doctor of Philosophy (1932), Professor and vice-rector of the Lviv University (1939-1941) and Professor of the Catholic University of St. Louis, USA (1948-1972). He was a full member of the Shevchenko Scientific Society in Lviv and the Shevchenko Scientific Society in the USA as well as a member of the American Physical Society. He was the author of the Ukrainian high school textbook "Essay on physics". Z. Khraplyvy was mainly interested in relativistic quantum mechanics and nonlinear Born-Infeld electrodynamics.

In 1923, Z. Khraplyvy passed the matriculation exam at the Gymnasium in Ternopil. At the same time, he enrolled in the courses at the universities of Vienna



The cover of Zenon Khraplyvy's textbook with a dedication to Professor Loria. LNNB.

and Kraków, but due to lack of financial support he was forced to drop out. In 1925, he started to work at the Audit Union of Ukrainian Cooperatives. From 1926 to 1929, he studied at the Lviv University; having passed the exam he obtained the qualification of the teacher of Mathematics and Physics.

He started his pedagogical career in the private Gymnasium in Peremyshl (*Przemyśl*). At that same time, he came to Lviv to participate in the seminars at the Institute of Theoretical Physics of the Lviv University. Being influenced by the dominant ideas of the time, he wrote two works on quantum mechanics ("On negative levels in the Dirac theory" and "On the electron's own potential in wave mechanics") on the basis of which he was awarded a Ph.D. degree in 1932. Z. Khraplyvy's achievements were not left unnoticed and in 1934, he was elected full member of the Shevchenko Scientific Society, and later member of the Scientific Council of the Shevchenko Scientific Society.

After the war, he emigrated first to Vienna and then to Munich, where he taught at the International Free University (1945-1947), which was established by the UN for the refugees. He also performed the duties of Professor of the Ukrainian Institute of Technology and Economics. In 1948, he emigrated to the United States at the invitation to work at the St. Louis Catholic University as the Professor of Physics.

Ostap Stasiw

Ostap Stasiw (January 1, 1903, village of Borshchovychi, now Pustomytivsky district, Lviv region – February 19, 1985, Alfeld, Germany) was a Ukrainian physicist, Doctor of Philosophy and Professor. Per the recommendation of V. Levytsky and V. Milianczuk, O. Stasiw was elected full member of the Shevchenko Scientific Society on March 30, 1936. He was also a full member of the Ukrainian Engineering Society, a founder and the director of the Berlin Crystallography Institute, a sponsor of the international journal "Physica Status Solidi".

In 1923, O. Stasiw entered the University in Berlin and upon completing his studies worked in various German scientific institutions. In 1951, on the basis of the Dresden Branch, Professor O. Stasiw founded the Institute of Crystal Physics of the German Academy of Sciences in Berlin. For outstanding contribution to the development of science for peaceful purposes, on October 7, 1956, the scientist was awarded the German National Prize in Science and Technology. In 1959, O. Stasiw's fundamental monograph "Electronic and ionic processes in ionic crystals" was published by the Springer publishing house. The main areas of O. Stasiw's scientific research were crystal physics, photochemistry and solid state physics. He studied the role of defects in silver halide crystals and discovered the physical phenomena of occurrence and displacement of color centers in alkali halide crystals when exposed to electric fields.

Mykola Dubovytsky

Mykola Dubovytsky (September 13, 1903, village of Mykulychyn – February 02, 1985, Kraków) was a Ukrainian scientist, Professor (since 1956), a specialist in metallurgy, a public figure and a full member of the Shevchenko Scientific Society (1938).

M. Dubovytsky fought in the Soviet-Polish war in 1920, being a soldier of the Ukrainian People's Republic army. After attestation at the internment camp in Kalush, with the assistance of Professor I. Feshchenko-Chopivsky, he entered the Academy of Mining and Metallurgy (*Akademia Górniczo-Hutnicza*) in Kraków, which he successfully graduated from in 1928 and continued to work there. Later, he established and headed the Department of Metal Science and Heat Treatment of Iron and Steel (1954-1962), simultaneously performing the duties of the dean of the Faculty of Metallurgy (1956) and the Professor. Being a student, he joined the organization "Symon Petliura Scholarship Fund" which formally existed at the Union of Ukrainian Emigrant Engineers and Technicians in Warsaw (with a branch in Kraków), where his main task was to provide financial assistance to the Ukrainian immigrant students studying in the Polish higher schools. A young scientist chose heat treatment as the topic of his research under the supervision of Professor I. Feshchenko-Chopivsky. M. Dubovytsky investigated the effect of vanadium and titanium on the properties of iron, nickel and cobalt as well as the properties of titanium steels. During the German occupation of Poland, he was widely credited for managing to retain valuable laboratory samples (over 200 kilograms of metal) and documentation.

Evhen Perkhorovych

Evhen Perkhorovych (*Evhen Perchorovyč*, 1903–?) was a Ukrainian scientist, Professor of the Lviv Polytechnic, a full member of the Shevchenko Scientific Society.

Studying at the Academy of Mining and Metallurgy E. Perkhorovych maintained close relationships with I. Feshchenko-Chopivsky and actively contributed to the "Symon Petliura Scholarship Fund".

In Warsaw, he became the host of the last "Ukrainian Technicians Feast" in the winter of 1938, which was held at the Ukrainian Bar "Var" (not far from Narutowicz Square) and was attended by I. Feshchenko-Chopivsky. In 1941, E. Perkhorovych was elected Chairman of the Ukrainian Technical Society, a professional society of Ukrainian engineers established in Lviv in 1909.

With the onset of World War II, E. Perkhorovych headed the Department of Metal Technology (now the Department of Applied Materials Science and Materials Processing) at the Lviv Polytechnic. Then, under his leadership, the disciplines in the Department of Metal Technology were taught in Ukrainian for the first time. With the beginning of the German occupation the Institute was closed. In

1944, many departments and some equipment were evacuated to the Austrian city of Graz. Meanwhile, in April 1944, Professor E. Perkhorych moved to Kraków, where he taught at the Academy of Mining and Metallurgy. With the advance of Soviet troops, he moved to Berlin, but was arrested by the representatives of the People's Commissariat for Internal Affairs (NKVD). From that point, E. Perkhorych's fate remains unknown.

REFERENCES

1. Аксиоми для нащадків. Українські імена у світовій науці. Львів, 1992, 544 с.
2. Гайда Р., Пляцко Р. Іван Пулюй. Львів, 2019, 220 с.
3. Головач Ю., Грицак Я. Визначні представники світової науки – закордонні члени НТШ. *Наукове т-во імені Шевченка і українське національне відродження*. Львів, 1992, с. 109-115.
4. Головач Ю. Наукове товариство імені Шевченка і фізика. *Український фізичний журнал*, 1992, т. 37, с. 468-473; т. 37, с. 474-480.
5. Кубійович В. Нариси історії Наукового товариства ім. Шевченка (1873-1949). Львів, 1991, 52 с.
6. Мудрий В. Український університет у Львові у рр. 1921-1925. Нюрнберг, 1948, 59 с.
7. Хобзей П. Таємний університет у Львові. *Україна, наука і культура*. Київ, 1991, с. 45-59.
8. Огоновський П. Учебник фізики для низших клас шкіл середніх. Львів, 1910, 144 с.
9. Романів О. Іван Феценко-Чопівський. Львів, 2000, 295 с.